

Hypergastromyzon eubranchus, a New Species of Gastromyzontin Loach (Homalopteridae) from Sarawak

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Abstract *Hypergastromyzon eubranchus* sp. nov. is described from the Lupar basin of Sarawak, Malaysian Borneo. It differs from the only other known species of *Hypergastromyzon*, *H. humilis*, from the Kapuas basin of western Borneo, in having a very large gill opening instead of a greatly reduced one, 23–25 instead of 28–30 branched pectoral fin rays, and pelvic fins incompletely rather than completely united to each other posteriorly.

An ichthyological survey of the Kapuas basin of western Borneo (Kalimantan Barat, Indonesia) conducted by the author in 1976 resulted in discovery of three new species of mountain-stream loaches of the specialized homalopterid subfamily Gastromyzontinae. Two of the new species were described in a revision of *Gastromyzon* Günther, 1874 (Roberts, 1982a), and the third, *Hypergastromyzon humilis* new genus and species, in a monograph on the freshwater fishes of western Borneo (Roberts, 1989). *Hypergastromyzon* differs from *Gastromyzon* and *Neogastromyzon* Popta, 1905, the other Bornean gastromyzontins with greatly enlarged pectoral and pelvic fins, in having relatively small and apparently primitive mouth parts (Roberts, 1989: fig. 63). In *Hypergastromyzon* the mouth is morphologically similar to that of *Homaloptera* Hoeven, 1833, a speciose and relatively primitive (compared to Gastromyzontinae) genus of Homalopterinae. This might indicate that evolution of the greatly enlarged and otherwise specialized paired fins of *Gastromyzon* and *Neogastromyzon* preceded the evolution of their highly modified mouth parts. The modification of the mouth parts may be related to a shift from insectivory to algivory.

In 1982 Joan Cramphorn made several collecting trips to the Batang Ai as part of an inland fisheries survey in Sarawak. The Ai is a foothill tributary of the Batang Lupar in western Sarawak, separated from the Kapuas basin by a relatively low but mountainous divide. With the help of Iban fishermen employing cast-nets, she obtained some 52 specimens of Gastromyzontinae. All but four of these belong to *Gastromyzon fasciatus* Inger and Chin, 1961, *G. ridens* Roberts, 1982, and *Neogastromyzon*

nieuwenhuisii Popta, 1905. The remaining four specimens represent an undescribed species of *Hypergastromyzon*. This new species differs strikingly from its only congener, *H. humilis*, in several respects. A revised generic diagnosis precedes its description.

With the exception of six specimens of *Neogastromyzon nieuwenhuisii* and one paratype of the new species in the fish collection of the California Academy of Sciences, CAS, Cramphorn's material of Batang Ai Gastromyzontinae is deposited in the British Museum (Natural History), BMNH. I am grateful to her and to Bernice Brewster and Gordon Howes of BMNH for permitting me to study this beautifully preserved material.

Hypergastromyzon Roberts, 1989

Hypergastromyzon Roberts, 1989: 91 (type species *Hypergastromyzon humilis* Roberts, 1989, by original designation and monotype).

Diagnosis. Gastromyzontins with head and body moderately broad and strongly compressed; pectoral and pelvic fins greatly enlarged, respectively with 23–30 and 18–21 branched rays; pectoral fin origin below middle of eye or somewhat posterior to a line vertical to hind border of eye; pelvic fins partially or completely joined posteriorly; eye relatively large; mouth small, about one-third to one-half as wide as head, with horny jaw sheaths strongly curved, morphologically similar to mouth of *Homaloptera*; three or four pairs of very short barbels, two rostral and one or two maxillary; rostral cap largely fused to and indistinguishable from upper lip except around base of rostral barbels; lower lip with medial groove well

developed posterolaterally but interrupted anteromedially; snout broadly rounded in dorsal view, more or less acuminate in lateral view; gill opening either very restricted (vertical, entirely above pectoral fin base) or very large (oblique, extending from above pectoral fin dorsoposteriorly to below and in front of pectoral fin origin ventroanteriorly); subopercular groove absent; pectoral fin separated from head by a deep groove extending ventrally to pectoral fin parallel to first pectoral fin ray (in *H. eubbranchus* this groove continuous with gill opening); abdomen between pectoral and pelvic fins with a ventrally flattened lateral expansion of body forming ventrolateral margin of abdominal suctorial surface; suprapelvic flap continuous with lateral extension of abdominal body wall, extending dorsally to first 4–5 pectoral fin rays but free from pectoral fin except for a fleshy or membranous frenum arising on its ventral surface and attached to anteriormost dorsal surface of pectoral fin; pored scales of lateral line scale row about 55–65; dorsal surface of pectoral fin base and suprapelvic flap scaleless; abdomen entirely scaleless; vertebrae 22–25+8–9=31–33; vertebrae 5–12 bearing large ribs gradually increasing in size posteriorly; ribs of vertebra 12 with expanded distal tips attached to dorsolateral surface of pelvic fin girdle immediately anterior to origin of anteriormost pelvic fin rays (this character is apparently shared with all Bornean *Gastromyzontinae*, and may indicate their monophyly; see Roberts, 1989: 83, table 3).

Although the mouth of *Hypergastromyzon* is very similar to that of more primitive or generalized *Homalopterinae* such as *Homaloptera*, in one respect it is clearly different. In *Homaloptera* there is always a well defined rostral groove separating rostral cap and upper lip. A well developed rostral groove is also present in *Gastromyzon* and *Neogastromyzon*. In both species of *Hypergastromyzon* the rostral groove is reduced or absent except for very small areas immediately adjacent to the base of each rostral barbel. Thus the rostral cap and upper lip are continuous and not readily distinguishable. For an account of the rostral cap, lips, horny jaw sheaths, and other mouth parts of cyprinoids and their nomenclature, see Roberts (1982b).

Key to species of *Hypergastromyzon*

1. Gill opening small, vertical, restricted to well above pectoral fin base; a single pair of maxillary barbels; pectoral fin branch-

ed rays 28–30; pelvic fins completely joined to each other posteriorly; pelvic fin branched rays 18–19; anal fin rays ii 4; caudal peduncle relatively slender, its least depth 13.2–14.2 times in standard length; vertebrae 24–25+8=32–33

..... *H. humilis*

2. Gill opening large, oblique, extending from well above pectoral fin base posteriorly to below pectoral fin origin anteriorly; two pairs of maxillary barbels; pectoral fin branched rays 23–25; pelvic fins incompletely joined posteriorly, posterior one-third separate; pelvic fin branched rays 19–21; anal fin rays ii 5; caudal peduncle relatively deep, least depth 11.0–12.1 times in standard length; vertebrae 22+9=31..... *H. eubbranchus*

Hypergastromyzon eubbranchus sp. nov.

(Fig. 1)

Holotype. BMNH 1984.11.15:1, 32.0 mm, mature male, Batang Ai near Wong Mepal, Sarawak; water exceptionally clear, depth and width of river variable with many areas of shallow rapids; river bed of rock, gravel, and pebbles of colored sandstone; Joan Cramphorn, 25 June 1982.

Paratypes. CAS 55889, 31.4 mm, mature male, Batang Ai at confluence of Sungai Delok, 1982; BMNH 1984.11.15:2, 35.6 mm, ripe female with eggs 0.4 mm, Batang Ai below confluence with Sungai Enkari, 1982; BMNH 1984.11.15:3, 17.2 mm, unsexed juvenile, Sungai Delok, Wong Nanga Jeliak; low water falls and rapids, water clear, bottom pebbles and gravel surrounded by rocks; Joan Cramphorn, 2–5 July 1982.

Diagnosis. *Hypergastromyzon eubbranchus* is distinguished from *H. humilis*, its only known congener, by the characters given in the key above.

Description. Unless noted otherwise, the following description is based on the holotype and two large paratypes. The small paratype, although its length is only half theirs, appears very similar to the larger specimens in all respects except coloration.

Proportional measurements (times in standard length): Head length 3.3–3.5, greatest width 3.7–4.1; snout 7.5–7.8; eye diameter 16.5–19.8; interorbital width 10.1–10.7; mouth width (at widest point) 9.6–10.1; gill opening length 6.8–8.9; body depth 6.3–7.0; caudal peduncle depth 11.0–12.1; pectoral fin length 2.7–2.8; pelvic fin length 3.2–3.4; and fin length 5.7–6.4.

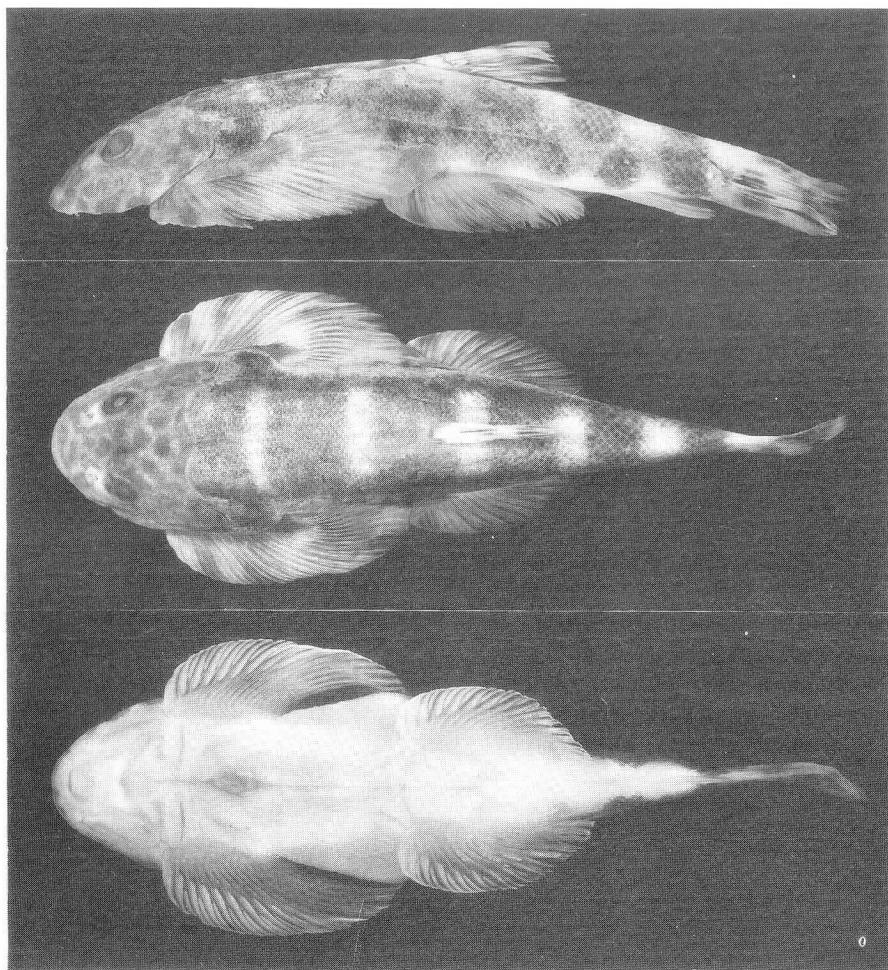


Fig. 1. *Hypergastromyzon eubranthus* sp. nov., BMNH 1984.11.15:1, holotype, 32.0 mm, male. Photograph by W. I. Follett.

Scales: Pored scales in lateral line series about 57–65; predorsal scales about 50; scale rows between dorsal fin origin and lateral line about 14–16, between lateral line and pelvic fin 9; circumpeduncular scales 26–27.

Fin rays: Dorsal fin rays ii 7; anal fin rays ii 5; pectoral fin rays i 23(1), i 25(2); pelvic fin rays i 19(1), i 20(1), i 21(1); principal caudal fin rays apparently 8/8.

Coloration: Adults with body more or less uniformly dark laterally, or with regularly alternating dark marks and dusty interspaces; dorsal surface with 5 or 6 transverse pale marks, evenly spaced but each successively slightly wider; first transverse bar at nape (this bar absent in one specimen), fourth just

behind dorsal fin origin (absent or faint in two specimens, well marked in third). Dorsal surface of head with variably reticulated or wavy pale lines; ventral surface of head and abdomen unpigmented. Dorsal surface of paired fins with 2–3 large, irregularly shaped dark marks (marks of similar size and shape commonly occur on paired fins of *Homaloptera* and *Neogastromyzon* but not *Gastromyzon*). Dorsal fin with two faint oblique bars formed by pigment overlying fin rays. Caudal fin with two large, irregularly shaped dark marks, a proximal mark near middle of fin, and an oblique distal mark towards its tip.

Juvenile coloration (17.2 mm specimen) strikingly different from that of adults, with a broad, contin-

uous, sharply demarcated dark longitudinal band on side of head and body, separating a pale longitudinal band with fine melanophores and unpigmented ventral surface of head and body; pigmentation of fins relatively simple or rudimentary; caudal fin with two marks essentially like those of adults.

Sexual dimorphism. Mature males with dorsal surface of interradial membranes behind pectoral fin rays 2-5 or 6 bearing an elongate patch of exceedingly numerous, close-set, minute tubercles; lower portion of gill cover (opercle) with numerous regular rows of minute tubercles (superficially resembling sensory papillae). Tuberculate patches on pectoral fin extending almost entire length of interradial membranes; at their widest point, near basal third of each ray, patches are about 12 tubercles across. Dorsal surface of pectoral rays 6 or 7 to 9 or 10 lack broad tuberculate patches of preceding rays but have two or three longitudinal rows of minute tubercles extending almost their entire length. Comparable pectoral tuberculation occurs in males of many species of *Homaloptera*, some species of *Gastromyzon*, and in the cobitid genus *Acantopsis* (Roberts, 1982a, b). Tubercles similar to the opercular tubercles of male *H. eubranthus* occur on the snout, cheek, or pectoral fin base of males of *Gastromyzon ctenocephalus* Roberts, 1982, *Neogastromyzon pauciradiatus* Inger and Chin, 1961, and *Protomyzon griseus* Hora and Jayaram, 1951. The 35.6 mm female paratype of *H. eubranthus* lacks the specialized

tuberculation found in the males (*H. humilis* is known only from adult and subadult females without notable tuberculation).

Etymology. The name *eubranthus* is from the Greek "eu" meaning good, but also original or primitive, and "branchos", gill.

Literature cited

- Roberts, T. R. 1982a. The Bornean gastromyzontine fish genera *Gastromyzon* and *Glaniospis* (Cypriniformes, Homalopteridae), with descriptions of new species. Proc. Calif. Acad. Sci., 42(20): 497-524.
Roberts, T. R. 1982b. Unculi (horny projections arising from single cells), an adaptive feature of the epidermis of ostariophysan fishes. Zool. Scr., 11(1): 55-76.
Roberts, T. R. 1989. The freshwater fishes of western Borneo. Mem. Calif. Acad. Sci., 14, xii+210 pp.

(Received September 22, 1989; accepted October 16, 1990)

サラワクから得られたタニノボリ科の1新種 *Hypergastromyzon eubranthus*

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サラワクのルーバー川流域から得られたタニノボリ科の1新種 *Hypergastromyzon eubranthus* を記載した。同属の唯一の他種であるボルネオ西部カプアス川流域産の *H. humilis* とは、鰓孔が大きいこと（後者では非常に小さい）、胸鰭分枝条数が23-25（後者では28-30）であること、左右の腹鰭が後方で不完全に合一すること（後者では完全に合一する）などで異なっている。